(5) *Increase in Diet.*—Geyelin has found that some chronic cases of acidosis are helped by an increase in the caloric intake.

Alkali should only be given when laboratory tests show danger of approaching coma, i. e., more than 2.5 grams of ammonia and a CO_2 tension of 30 mm. of Hg. If the danger is slight, only small doses should be given until the CO_2 tension has been definitely raised. Allen and Joslin both emphasize the danger of too large doses of alkali. Joslin has only given 66 grams of bicarbonate in the last nine months, and that only to two patients.

But when coma is threatening, alkali should definitely be given. The section in Joslin's book on the treatment of coma should be consulted by all who wish to have a comprehensive modern idea of this important subject. He lays stress on putting the patient to bed, keeping him warm, and at rest. Bowels should be emptied. Elimination of acid bodies should be encouraged by a large fluid intake by mouth and colon and if necessary intravenously. A large amount of alkali should be crowded into the patient preferably by mouth but if this is impossible intravenously. Digitalis and caffein should be given to support the heart and morphine to control the nerves.

CONCLUSION.

The importance of laboratory examinations of the urine, alveolar air, and blood in the diagnosis of acidosis and the conduction of the starvation treatment should be fully realized.

THE ETIOLOGY OF PELLAGRA.*

By J. E. JENNISON, M. D., San Diego.

Pellagra is of more than academic interest to physicians residing in San Diego, as may be evidenced by the fact that I alone have seen at least nine cases of this malady during the last six years.

The etiology of pellagra has been as elusive as the Irishman's flea, of which he remarked, "Ye put yer finger on it and it ain't there." I will not attempt to review in detail the various theories which have been advanced, as that would make my paper far too lengthy for one evening's consideration. I will, however, refer to some of them very briefly, and then lead up to certain observations of my own, and from these I will venture my personal opinion as to the probable etiology.

The Zeist theory—that pellagra is caused by the consumption of spoiled corn products—held sway for more than 200 years. It was probably first advanced by Gaspar Casal of Spain in 1762, and under the skilful elaboration of Lumbroso, late in the 19th Century, it finally met with almost universal acceptance. At a somewhat later date, in our own country, Dr. Bass of New Orleans lent further support to the Zeist theory by producing experimentally what he believed to be pellagra, in chickens, by feeding them meal made from spoiled corn. Isadore Dyer confirmed these observations. The relationship between pellagra and spoiled corn seemed well established by these and many other physicians. But the true nature of the etiological factor still remained a subject for much discussion and difference of opinion. Lumbroso contended that pellagra was caused by certain toxins formed in spoiled corn, by the action of saphrophytic bacteria, which in themselves were harmless.

Other investigators attributed the disease to the direct action of bacteria, and many different bacteria were from time to time isolated from corn and its products, in the belief that they were the specific germs of pellagra.

At this juncture, Sambon, representing the British Pellagra Commission, appeared on the scene, with the declaration that pellagra was not due to the consumption of spoiled corn at all, but that it was an infection, due to some protozoan implanted in the blood-stream by some blood-sucking insect, possible sand-fleas, and he presented much plausible evidence in support of his views.

A little later, in the United States, the Thompson-McFadden Pellagra Commission, acting under the auspices of the New York Post-Graduate Medical School, also discredited the spoiled-corn theory, and in its report to the American Medical Association at Atlantic City in 1914 they reported in substance, as follows:

1. That pellagra was not caused by a corn meal diet, either good, bad or indifferent;
2. That no causative relation could be found between pellagra and any form of diet;
3. That a diet rich in fresh meats and eggs would not prevent it (Of this statement I will make further mention later.);
4. That pellagra was communicated from person to person.
5. That it was most prevalent in communities having open surface privies.
6. That it was essentially due to faulty disposal of sewage.

These conclusions would of course warrant the assumption that pellagra was caused by some living micro-organism, carried in some manner from these privies to the patients.

Attempts to connect the etiology of pellagra with the dietary continued however, and readers of medical literature noted about this time the frequent appearance of a new word, viz., Vitamines. Beri-beri, we were told, is caused by a diet from which these vitamines have been removed by the act of polishing rice. In like manner we were told that the modern process of milling corn destroyed these vitamines, by excessive heat, thus making a corn-meal diet provocative of pellagra, because of a deficiency of these very vitamines.

Most remarkable, because the most sweeping in its assertions, was the theory advanced by Dr. Joseph Goldberger, of the U. S. Public Health Service, and publicly announced by that department on November 12th, 1915. He concluded that a lack of animal and leguminous protein was the prime factor in the causation of pellagra, and particularly based this conclusion upon the results of experiments, notably two: the first, where 171 out of 172 pellagrin inmates at two orphanages

* Read before the San Diego County Medical Society, August 1, 1916.

were apparently cured of pellagra by a proper regulation of the diet, and without the use of medicine; the other, at a convict camp where eleven healthy convicts were purposely placed upon a diet deficient in animal and leguminous proteins, with the result that in five months six of these convicts developed pellagra, and that, while no cases developed in any of the other convicts of the camp, of which there were many.

Thus it would seem that Goldberger could induce pellagra or remove pellagra whensoever he was so disposed, by simply juggling the protein constituent of the dietary. Could proof be more convincing than this, that pellagra was not caused by the consumption of spoiled corn-meal in particular, nor by the bite of any disease-carrying insect, but that it was caused by a deficiency of certain elements of the diet? Not much time has been given us, as yet, to try out this theory, but recent medical literature is already showing evidence that the phenomenal results of Goldberger's experiments are not being duplicated.

Dr. A. W. Dumas of Natchez, Miss., reports in the July number of Clinical Medicine that he is finding pellagra as difficult to treat with the Goldberger diet as he formerly did without it. Also, Joblin and Peterson of Vanderbilt University, in the May number of the Journal of Infectious Diseases, takes issue with Goldberger. They specifically call attention to one family who conducted a grocery and butcher shop, to whom a daughter, suffering with pellagra, came home for a visit. The family consumed an excess of proteins both animal and vegetable. Eggs, ham, fresh meat and milk were partaken of freely, and yet a few months later two more cases of pellagra developed in this family. These investigators admit that the population of Nashville consumes much carbohydrates, but they assert that at least 68% of the 421 cases investigated by them gave a history of a diet sufficient in proteins and vitamines. They also call attention to the fact that the natives of Calcutta consume an average of less than forty grams of protein per day, of which only two grams is animal protein, and of course many fall far short of this very low average; and yet there is no pellagra in Calcutta.

Furthermore, they call attention to the fact that there are 12,651 open privies in Nashville. They therefore agree with the Thompson-McFadden Commission in connecting the etiology of pellagra with these privies.

Dr. Holmes of Chicago, representing the Illinois State Board of Health, gives us still another theory in the last March number of the Archives of Internal Medicine. He asserts that an excess of carbohydrates and a lack of lactic acid germs in the diet, leads to a pathological over-production of the bacillus Welchii, which finds a more or less natural habitat in the bowels, and that an excessive number of these same bacillus Welchii produce the symptom-complex of pellagra. He also surmises that the curative properties of the Goldberger diet were due not so much to the increase of protein but more especially to the presence of the lactic acid bacilli in the butter-milk which formed a part of the diet, thus providing an antidote to the bacillus Welchii.

This, briefly, brings a summary of the medical literature, appertaining to pellagra, up to date. That it leaves the etiology of pellagra unsettled is, I think, obvious. That the dietary is an important element in the treatment of pellagra, as indeed it is in any disease, no one will deny, and that it likewise is a factor in the etiology has been well established, both clinically and experimentally. But that it is the exciting factor, or the specific factor, if you please, I do not believe, for it would be passing strange indeed if the population of our Southern States suddenly adopted such a badly balanced diet in or about the year 1907, when pellagra first became known in those States, and still more strange is it that there was no pellagra in the South during the Civil War, not even at Andersonville prison, if a mere deficiency in protein food alone could cause pellagra. Nor does it seem probable that it was prevalent but not recognized and diagnosed prior to 1907, for Dr. Lavender of the U. S. Public Health Service made diligent search for it in various charitable institutions of the South in 1909, without finding a single case in those institutions; and yet in 1915 one of these same institutions had 10% of pellagrins among its inmates, according to the report of Jobling and Petersen already referred to. I therefore feel disposed to agree with Dr. Beverly R. Tucker of Richmond, Virginia, who, in Vol. I of the 26th Series of the International Clinics, gives expression to the belief that Goldberger's six convicts merely suffered a loss of nutrition, and consequently of resistance, as a result of the restricted diet imposed on them, and that inasmuch as they lived in a community where pellagra was prevalent they simply became the victims of an infection which they in their reduced condition were unable to throw off, just as they might have acquired tuberculosis had they been exposed to it. And it does seem that an impartial review of the latest medical literature should incline us to accept with a grain of salt Goldberger's statement about the alleged cure of 171 out of 172 pellagrous children with nothing more by way of treatment than the giving of a carefully selected and well-balanced diet. To me it prompts the query: "Were they really cured?"

I will now make a few observations of my own, which are not altogether original with me, but which I have often pondered over ever since my first personal experience with pellagra.

I wish to call attention to the close analogy between pellagra, of unknown etiology, and syphilis, of known etiology—the latter being, as you know, due to a protozoan.

Pellagra tends to chronicity—so does syphilis.

Pellagra exhibits lesions of both the skin and the mucous membranes—so does syphilis. (And in passing I ask you to stop and reflect how really few diseases do cause lesions of both skin and mucous membranes.)

Pellagra exhibits a marked symmetry in its cutaneous manifestations—so does syphilis, especially in its earlier stages.

Pellagra, when uninfluenced by treatment, is subject to periodic exacerbations—so is syphilis, though it does not manifest the seasonal variations of pellagra.

Pellagra causes first an exaggeration and later a loss of certain reflexes, notably the patellar,—so does syphilis.

Pellagra leads to marked degeneration of the central nervous system, causing incoordination of motor nerves as well as a terminal insanity—so does syphilis.

Pellagra exhibits marked tendency to relapse after apparent cure—so does syphilis.

Pellagra in its acute form, especially the so-called typhoid form, shows pronounced and almost immediate improvement under the administration of the newer arsenical preparations, and that irrespective of the dietary, insofar as I have been able to observe—and so does syphilis.

Pellagra is not so easily influenced by this form of medication after the central nervous system becomes involved—neither is syphilis, because the invading organism has gotten beyond the reach of the drug.

Form this analogy I contend that there may be a relationship between the etiology of pellagra and that of syphilis, and I hold to the opinion that pellagra is caused by some as yet unrecognized protozoon, and I base this opinion on:

1. The observations of Sambon.

2. The observations of the Thompson-McFadden Commission, which indicated the communicability of pellagra, though they did not especially hold out for the protozoon nature of the infection.

3. The close analogy existing between pellagra and syphilis, the latter being of known protozoon origin.

4. The fact that pellagra may be favorably influenced by anti-protozoon medication, irrespective of diet.

MALINGERING; ITS DIAGNOSIS AND SIGNIFICANCE.*

By JOSEPH H. CATTON, M. D., San Francisco, Cal.

Malingering is the act of knowingly pretending the presence or the absence of disease; of knowingly causing disease; or of knowingly protracting an existing disease; the disease being referred to the person himself.

EXAMPLES FOLLOW.

1. Patient claimed that exposure to draught in shop was followed by chilliness, and development of a rash all over the body. Syphilis was indicated. He denied exposure and genital sore. Examination of penis showed large sclerotic scar; and Wassermann was positive. This patient was a malingerer in that he pretended the absence of disease.

2. A patient complaining of headache which he knows is non-existant, is a malingerer because he pretends the presence of disease.

3. A person producing a diarrhoea by means of violent purgation, in order that he may be thought ill, is a malingerer because he has caused disease.

4. He who wilfully neglects to carry out orders for treatment is a malingerer, because he may protract existing disease.

Cases of out and out malingering are exceedingly rare; but cases in which there is a larger or smaller element of malingering are very, very common. Many a wife malingers a little, that she may receive sympathy from her husband. A love-sick girl causes her sweetheart to return to her, after a quarrel, by the timely occurrance of a headache, or the like. Many of our street beggars are malingerers. In private practice the condition is rarely seen, except in the case of the woman who claims tuberculosis in order that an abortion may be done; the user of morphine who furnishes the most varied complaints in his plea for medication; and the pregnant woman who has carefully memorized the typical history of a fibroid and seeks to have "it" removed.

An acquaintance with malingering is most important; and at this particular time for three main reasons; and they increase in importance in the order given.

1. Municipal and other charitable hospitals attract malingerers, and the wards of these institutions must be kept active.

2. With the advent of more and more legislation along the line of Workmen's Compensation, Employer's Liability and Social Insurance the doctor will be brought in touch with a greater and greater number of patients who will malinger, and

3. At this time of most vital importance; men will malinger against enlistment into the service of their country; and soldiers of this type, having enlisted, will seek to avoid duty.

As an example of the indigent who malingers in order to remain in a free hospital, the following case is cited:

Case A.: Patient admitted to the San Francisco Hospital because of pains in various joints. One knee had been swollen previously. There were at no time any local objective signs of joint disturbance; there were neither fever or leukocytosis. The patient was, however, completely worked up with the result that the only positive diagnoses were slight disturbance in a couple of teeth, and a slight anemia. Teeth were attended to and medication given for the anemia, but the joint complaints were still present after three or four weeks. On explanation to the patient that there was absolutely no cause for joint pains, they disappeared gradually, but there coincidently developed a rash. Latter was distributed on front of thighs, on left arm, and on left shoulder and consisted of easily recognizable scratch marks, none of which were out of the reach of her right hand. Patient overheard discussion as to the nature of these lesions and immediately assumed a typical attitude of defense. She gave up all her complaints and from then on, insisted simply that she had no place to go when she should leave hospital. The social status is usually the basis of malingering in these individuals; and the workers

* From the Department of Neurology and Psychiatry of the San Francisco Polyclinic.